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HISCOCK & BARCLAY, LLP
2000 HSBC PLAZA
ROCHESTER, NY 14604-2404

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| EXAMINER |
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ANGEBRANNDT, MARTIN J

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| ART UNIT | PAPER NUMBER |
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1756

DATE MAILED: 03/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,885

Applicant(s)

LICHTENBERGER ET AL.

Examiner

Martin J Angebranndt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8/19/04 & 10/23/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/19/04 & 10/23/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-23 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Material critical or essential to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976).

The claims require a support or substrate as the media are described as being provided by coating via sputtering or the like ([0030] in the prepub). These reflective layers and the means for producing them do no result in self supporting films. Please put this in claim 1.

In claim 21, the other layers including that which separates the two reflective layers should be recited.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1,2,20 and 24 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Fert et al., "Skew scattering by a rare-earth impurities in silver gold and aluminum", Physical Review B Vol. 13(1) pp. 397-411.

See table 1 on page 399 which discloses a Ag-0.5% Sm film, noting that in the right hand column of page 398, these are described as formed into foils 0.07 mm thick.

The examiner holds that the foil is within the scope of coverage sought as the claims make no mention of a substrate and the film is reflective and may be pierced by laser light.

6. Claims 24 and 25 are rejected under 35 U.S.C. 102(b) as being fully anticipated by STN abstract of Ivanov, et al., "Heats of formation for silver-barium and silver-samarium melts", Khimicheskie I Boilogicheskie Nauki, Vol. 8, pp 43-44 (1990).

The STN abstract indicates that Ag-Sm alloys with 0 to 49% Sm were prepared and tested. There is a specific mention of 0.38 Sm in the abstract. The examiner is attempting to obtain a copy of this journal article and reserves the right to replace the abstract with the article without prejudice to making the next office action final.

7. Claim 24 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Suzuki et al. '643.

See table 1, which includes and alloy of Ag-0.1 Li-0.1 Sm. The electrical contact materials may include 0.1-1 wt % Mn and Cu which increase the hardness and lubricity and wear resistance of the resulting alloy. (3/18-27 and 4/17-35).

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8. Claims 24 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki et al. '643.

It would have been obvious to one skilled in the art to modify the cited Ag-0.1 Li-0.1 Sm alloy by adding to increase the hardness and lubricity and wear resistance of the resulting alloy.

9. Claim 24 and 26 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Takahashi JP 07-228931. (machine translation attached)

See table in column 3, samples 3,4,7,8, and 12. The alloys may contain Sm in amounts of 0.05-5 wt % and less than 12 wt% for Cu [0004] and abstract.

10. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi JP 07-228931.

It would have been obvious to modify the compositions by using samarium within the 0.25 to 0.35 wt% range in place of the 0.5 wt % used in examples 3 and 7 with a reasonable expectation of forming a useful alloy based upon the disclosure of the range and further it would have been obvious to use Cu in amounts of 0.2 to 2 wt% based upon the direction to use Cu in amounts of less than 12 wt%.

11. Claim 24 and 26 are rejected under 35 U.S.C. 102(b) as being fully anticipated by JP 48-095311.

See the Ag-0.98 Sm disclosed in figure 1 and the Ag-1Sm and Ag-0.5 Sm-0.5 Mn disclosed in figure 3. The addition of Mn, Zr, Ti, Ni, or Zn in amounts of less than 1 % is disclosed (abstract and page 56, upper right hand column)

12. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 48-095311.

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In addition to the basis set forth above, it would have been obvious to one skilled in the art to use Ti in place of Mn with a reasonable expectation of comparable results based upon the disclosure of equivalence.

13. Claim 24 and 26-27 are rejected under 35 U.S.C. 102(b) as being fully anticipated by CN 1073292.

See compositions disclosed on page 6, which include 0.8 wt% Sm, 1.14 wt% Cu, 0.3 wt% Ni. The amounts of Sm may be within the range of 0.05 to 2 and the amounts of Al, Cu or Mn may be 0.1 to 5 % (page 2).

14. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over CN 1073292.

It would have been obvious to modify the compositions by using samarium within the 0.25 to 0.35 wt% range in place of the 0.8 or 0.5 wt % used in examples 1-3 and 5 with a reasonable expectation of forming a useful alloy based upon the disclosure of the range and further it would have been obvious to use Cu in amounts of 0.2 to 2 wt% based upon the direction to use Cu in amounts of 0.05-5 wt% and/or to use Al or Mn in place of Cu with a reasonable expectation of comparable results based upon the disclosure of equivalence.

15. Claim 24 and 26 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Murakishi et al. JP 07-207384 (machine translation attached).

See the first alloy described in table on page 3. The use of 0.01- 1 % of Si, Ti, Zr, Hf, Y, Sm, Eu and Er in Ag or AgCu alloys is disclosed. [0005]. The range of Cu used in 0 to 10%

16. Claims 24-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakishi et al. JP 07-207384.

It would have been obvious to modify the compositions by using samarium within the 0.25 to 0.35 wt% range in place of the 0.2 wt % used in examples 1 with a reasonable expectation of forming a useful alloy based upon the disclosure of the range and further it would have been obvious to use Cu in amounts of 0.2 to 2 wt% based upon the direction to use Cu in amounts of less than 10 wt% and/or to use Ti in place of a portion of the Cu with a reasonable expectation of comparable results based upon the disclosure of equivalence.

17. Claim 24 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Ando et al. '526.

See figure 10 and corresponding text at 5/30-32, which describes $\text{Ag}_{60}\text{Zn}_{40}$ alloys with 0.5 to 8 wt% Sm.

The examiner notes that the alloy claims are open to the addition of a large amount of other additives in view of the "comprising" language and the lack of any direction in the specification limiting "silver based alloy" to a minimum silver content.

18. Claims 1-9,13-17,20 and 22-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai et al. '772, in view of Ito et al. '049.

Nakai et al. '772 teach various Ag alloys and thier properties in figures 14-16. The examiner notes that Ag-Cu and Ag-Au have the highest initial reflectance for all amounts added (figure 16). The use of this reflective layer in DVD-ROM and CD-ROM is disclosed. [0005,0051]. The formation of either reflective or semi-reflective layers is disclosed. [0022]. The addition of Nd to Ag suppresses diffusion of the Ag and grain growth, which result in increased stability [0023]. The addition of Au, Cu, Pd, Mg, Ti and/or Ta in amounts totaling 0.2-5% to improve oxidation resistivity/ corrosion resistance is disclosed. [0024,0079]. The

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embodiment described with respect to figure 13 is Ag-0.5% Nd,-0.9% Cu-1.0% Au. [0067]. The Nd may be added in amounts of 0.1-3 % [0047,0021]. The discussion concerning the criticality of the ranges for the Nd describe it in terms of rare earths. [0049]

Ito et al. '049 teaches Ag alloys with various elements including Cu-Ni, Pd, Cu-Ti, Pd-Cu, Ti, Nd, Sm, Al, Pt and Ta in tables 4-6. The Ag-Nd has a reduced lifetime as shown by the triangle, rather than a circle in table 5.

It would have been obvious to one skilled in the art to modify the examples of Nakai et al. '772 by replacing the Nd with Sm based upon the improved performance (lifetime) taught by Ito et al. '049. Further, it would have been obvious to use the disclosed additive elements in the amounts disclosed with a reasonable expectation of forming useful reflective layers in the optical recording media.

19. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nee '603, in view of Nakai et al. '772 and Ito et al. '049.

Nee '603 teaches the use of silver-manganese alloys where the manganese is present in amounts of 0.01-7.5% [0061]. To these alloys, a third element may be added, including Ni in amounts of 0.01 to 5%, [0026] and other elements including Au, Cu, Pt, Pd in amounts of 0.01-5% and other elements including Ti in amounts of 0.01-5%. [0065]. The formation of AgCuMn alloys, where the Cu is preferably present in amounts of 0.1-5% and the Mn is preferably present in amounts of 0.1-3% [0067]. The addition of a further element, such as Al, Ti or Ni in amounts of 0.01-5% is disclosed. [0068]. The use of these in DVD or CD formats is disclosed and the use of a two reflective layer system is disclosed. (figure 3) See the Ag-0.8%Cu-1.5% Mn in table III and the AgCuTi alloy in table III as well as the alloys in table I.

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It would have been obvious to modify the examples and teachings of Nee '603 with respect to table III and/or the general teachings with respect to AgMn or AgMnCu alloy reflective layers by adding 0.1-3% Sm based upon the disclosure of Nakai et al. '772 that another lanthanide, Nd, when added to Ag suppresses diffusion of the Ag and grain growth, which result in increased stability when added in amounts of 0.1-3% [0023] and the teachings of Ito et al. '049 that Sm exhibits improved properties over Nd.

20. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nee '603, in view of Nakai et al. '772 and Ito et al. '049 combined with Dirks et al. EP 0064777, Watanabe et al. JP 08-291347 and Takagi et al. JP 07-301705

Dirks et al. EP 0064777 teaches various reflective layers useful in optical recording media including Ag-Cu reflective layers with more than 40% Ag, which may also include Al. (5/10-11, 5/22-28). The addition of 0.1-3% lanthanides to Al alloys is disclosed as allowing the desired oxidation (5/29-31).

Watanabe et al. JP 08-291347 (machine translation attached) teaches the addition of Sm to Au to improve the hardness, corrosion resistance and mechanical strength. (abstract, [0011-0013]).

Takagi et al. JP 07-301705 teaches Al alloys which have one of more of elements including Nd, Sm, Ti, Mn, Ni, in amounts totaling 0.1-10%. The data for Nd and Sm in figures 1, 2 and 4 are similar in terms of reflectivity changes with the concentration of the elements, noting the drop off for Sm is less drastic than that for Nd. The data for the various transition elements is very similar in figure 3, 5 and 6. The addition of these elements is described as

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improving reflectance, corrosion resistance and presentation in reflective films used in optical recording media.

21. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Harigai et al. JP 05-159363 teaches Ag-Ni, Ag-Ti and Ag-Mn alloys for reflective layers for optical recording media [0006].

Aratani et al. EP 1122723 teaches various Ag alloys used in optical recording media.

STN abstract of Li et al., "Internal oxidation and properties of palladium-40% silver-1% Re(Re = Sm, Eu, Gd) alloys", Guijinshu Vol. 11(2) pp. 18-22 (1990) teaches a PdAg alloy with 1% Sm added.


STN abstract of Xie et al., CN 1301875 teaches a CuAgFe alloys with 0.5% Sm.

22. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J Angebrannndt
Primary Examiner
Art Unit 1756

03/23/2005